[A] PROVIDER TRANSFER SERVER AND A METHOD OF PROVIDING A PROVIDER TRANSFER SERVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to [a] provider transfer servicing technology, and it particularly relates to a provider transfer server and a service method [which] that performs a connection service [and its provider transfer service method,] in an environment where there exist a plurality of [connection] network service providers [which take care of connection service to a network,]; and, a user node [which requests the] that initiates connection to the network.

2. Description of the [Related] Prior Art

[0002] The Internet was [primarily] initially used in academic settings [and mainly used] primarily for [search of certain] searching for information. Recently, the Internet [becomes] has become indispensable, as an infrastructure of electronic business transactions, for so-called B to B (a link between businesses), B to C (a link from business to consumers) and C to C (a link between consumers) communications. [It is obvious from the recent economic boom evidenced in the U.S. that IT or information] Information technology (IT) is a major driving force of [the] economic development[. Thus, it is a] and so it is very important [object, among other things,] to maintain and expand the communication infrastructure which is a backbone of IT[. In order];

and to offer a wide range of consumers a faster and more [comfortable] user-friendly network environment[, various projects are under way led by private organizations and as government-led policies].

[0003] However, present conditions [which] that surround [the] consumers who utilize the Internet are not so [desirable] user-friendly. [The] Most consumers must bear[, on their major parts,] the communication expenses and [the] connection [charge] charges to get [connected to] on the Internet in order to [use] access various services available on the Internet.

[0004] Fig. 1 illustrates, as the prior art, a [structure of the system] 10 in which a consumer (referred to as a user hereinafter) gets connected to the Internet by a dial-up connection. Through [a] public network 16, a user node 18 dials [to] an [internet] Internet service provider 14 (referred to as an ISP 14 hereinafter) [to which the user made a contract, so as] to attempt to establish a connection. The ISP 14 is connected to the Internet [14] 12 via an exclusive line[,] so that the user node 18 is thereby connected to the Internet 12 by the ISP 14.

[0005] The communication [expenses occur] expense starts when the user dials [to] the ISP 14; while the connection charge [comes into effect as] is a handling fee of ISP 14. In order to keep [the] communication charges as low as possible, consumers in general use [the] dial-up [connection] connections instead of a permanent or online connection. [On the other hand, in order to] To

keep the connection charge low, it is necessary for [the] consumers to find a service provider whose service charge is relatively low, among the many [other] [ISP's flooded into this business sector] ISPs that now exist.

[0006] No further capability is [primarily] required once [the] an ISP connects [the] a user to the Internet. Thus, for the user, it suffices that there is an ISP which offers [a comfortable] an efficient connection environment, and no strong brand recognition for [the] an ISP is necessary. Thus, [the] users tend to [make] contract with [the] an ISP whose connection fee is [cheaper,] lowest so that[, for example, the users] a user will attempt to establish connection [at] through a single access point or a few available access points of the ISP. As a result thereof, [a situation occurs in which] the dial-up line frequently becomes [almost always] busy[,] so that the connection is [hardly established] difficult to establish, in spite of the [cheap] low connection fee. On the other hand, the ISP [where the] whose connection tends to be established rather easily, oftentimes charges a relatively high connection fee, thus creating a dilemma [to] for the user wishing to use the Internet frequently.

SUMMARY OF THE INVENTION

[0007] The present invention has been made in view of the foregoing circumstance[,]; and, an object [thereof] is to provide [a] technology by which the user node gets connected to the network in [a desirable] an efficient manner. Another object [thereof] is to provide a connection technology [from]

through which the [network-connection] service providers [also] maximize their profit.

[0008] The [embodiments according to the] present invention [relate] relates to a provider transfer server (also referred to as a server hereinbelow). [The provider transfer server which provides a predetermined service for a user node, the] This server comprises[:] a first communication unit which serves as an access point [connected from] for the user node; a second communication unit which connects the server to any one of [access points owned by] a plurality of connection service providers; a detection unit which detects [a] the connection [service] state of [a] the plurality of the [connection] service providers; a selection unit which selects a [connection service] provider based on the state detected by the detection unit and which instructs said second communication unit to [get connected] connect to [an access point of the connection] the selected service provider [selected]; and a communication channel [establishing unit] which establishes [a communication channel] the connection between the first and second communication units [in the event that] when the second communication unit [is connected] connects to the access point of the selected [connection] service provider.

[0009] As an example of a provider, there is [available] the ISP mentioned above[,] and [of course any] several other connection–related service providers [may serve as the provider]. As an example of connection methods, there is [available] the dial-up connection which realizes [PPP (]Point-to-Point Protocol

(PPP), and [of course any] several other connection methods or protocols [may serve as such].

[0010] In this [structure] system, [the] a user node [is] first [connected to] accesses the first communication unit [as an access point]. [Moreover,] This unit detects the connection service state of a plurality of [the] providers checking, for example, the line congestion degree and the connection fee[, are detected]. Based on the detected [state,] information, a provider is selected [is a provider] whose line is open and connection fee is [cheaper] lowest, for example, and which is thus suitable for [the user's merit, so that the] use. The second communication unit is then connected to the access point of the provider. At this point, a connection is established between the user node and the first communication unit, and another connection is established between the second communication unit and a provider. Thereafter, a communication channel is established between the first and second communication units, and finally the user node is connected to the provider in a manner such that the server plays a role [of] as a relay station. Thus, as long as the user gets connected to the server, the server takes care of connecting the user to an appropriate provider[,] so as to achieve high usability and increased convenience to the user.

[0011] The server may [further comprise:] also include an [authenticating] authentication unit which [authenticates] verifies that the user [node] is a legitimate user of the provider transfer server; [and an authentication] also

including a data [supplying] supply unit which, upon request [of authentication] from the [connection] service provider, supplies data necessary for the requested authentication. A user ID and a password [serve as] are examples of the "data necessary for the requested authentication".

[0012] [By implementing this structure] In this system, the user needs only to [make] contract with an operator of the server, and it suffices that the server makes a contract with the provider on behalf of the user. Thus, the user has increased usability and convenience. Moreover, instead of [that] each provider [charges the] charging a connection fee to a plurality of users, the connection fee can be charged collectively to the contracting server. [Moreover, each] Each provider [needs not] does not need to actually recognize the users connected to each provider, [and] but [to] only recognize that the server gets connected to the provider. [Namely, the] The server is regarded as [one of users] a user whose connection time to the provider is long.

[0013] The server may [further comprise:] also include a recording unit which records sessions [where] when the communication channel is established [for the connection service provider, for each connection service provider;] and a charge unit which calculates a service fee incurred by a user for each connection service provider, based on data [of] from the session recorded by the recording unit. When the line of a provider is [rather vacantly open] relatively vacant, the server connects the user to [such a] that provider[,] so that the provider can [enjoy] obtain the additional revenue of [the] a connection fee.

[Thereby, it] It is desirable [to] for the provider that the line usage rate [of such the provider] will increase when the line is not busy, and [a] part of [the revenue of] the connection fee thus earned will be reimbursed to the operator of the server as [an introduction] a handling fee. The structure may be such that the server bears the communication cost [which is] otherwise paid by the user node when connecting [the] to a server, on the condition that the server [enjoys this introduction] receives the handling fees. This is a type of [the] collect call scheme[, so to speak].

[0014] Since [the] users are introduced by the server, the provider can eliminate overhead cost which is otherwise used in finding new clients [(users)]. Thus, a site which has [not received access from general users] a low volume of usage can earn [the] added revenue [as a commercial provider] by opening [the] its idle line capacity to the provider transfer server.

[0015] [When the] The server [behaves as] appears to be a sole user, on behalf of a plurality of [the] users, to the provider, and each provider charges [the] a connection fee to the operator of the provider. [The] This connection fee [corresponds to] equals the [total] sum of the connection fees incurred when each user [gets] is connected to each provider. Thus, the charge unit [may] will calculate for each user an allotted [fee of the connection] portion of the fee the operator [of server] paid to the providers, based on [session] connection time data, and [may] charge [to] each user. [Since this] Although each allotted fee is one which must be eventually paid by the user, [there is no adverse effect on

the user's part. Rather, this is a merit for] the user benefits here because there is no need of making [cumbersome] numerous contracts with [various] several providers.

[0016] While the selected provider ultimately connects the user [node] to the Internet, the second communication unit and a plurality of [the connection] service providers may be connected in an area more local than the Internet. [For example, there] There is available a structure such that the server is interposed between the user [node] nodes and an access point of the provider. The public network is generally used up to the access point, and the server [may be] is connected [to] between the user node and the local provider [at a level of the public network]. When the user [node] and the server are connected in a local area which is not [yet in] connected to the Internet [area, such a structure is advantageous in terms of security and it is easy for the provider to treat the server as a user], the system is secure. Moreover, when[, for example, the structure is such that] the server is connected to the provider by [the] a dial-up connection, the provider [needs not] does not need to change its structure, thus [being advantageous in carrying] it can better carry out its services.

[0017] [Another embodiment according to the] The present invention [relates to a] also comprises the method of providing a provider transfer service. [The method comprising: detecting] Detecting, at a [proper timing] selected time, [a] the connection service state [in] of a plurality of [connection] service providers

[which provide connection services to network]; receiving a request in which a user [node] requests to [get] be connected to the network; selecting a [connection] service provider according to the state of activity detected; and relaying a communication between the [connection] service provider thus selected and the user node. [Through these processes] In this method, an intermediary process is performed in a manner such that the provider transfer service is treated as a user, by the [connection] service provider thus selected while the user node is treated as a user by the provider transfer service. Thus, [it is advantageous in] the advantage is that a user only makes a single contract with [the] a server but the user can [still] actually make use of a plurality of [the] providers through the server.

[0018] Moreover, this summary of the invention does not necessarily describe all necessarily features so that the invention may also be sub-combination of these described features.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] Fig. 1 illustrates a [structure of the] conventional system in which a user [gets] is connected to the Internet by a dial-up connection.

[0020] Fig. 2 illustrates [a structure of] a system [50] including a provider transfer server [60] according to an embodiment of the present invention.

[0021] Fig. 3 is a block diagram showing [a] the structure of the server [60].

[0022] Fig. 4 is a table showing [a] the data structure of the provider information database [110].

[0023] Fig. 5 shows a screen [22 displayed on] display of a user terminal [by means of] displaying the function of the preference registration unit [124].

[0024] Fig. 6 is a table showing data inside the user preference database [112].

[0025] Fig. 7 is a table showing data inside the session table [132].

[0026] Fig. 8 is a table showing the details of a debit note [320] to [the] a provider [ABC].

[0027] Fig. 9 is a table showing the details of a debit note [340] for the connection fee [charge 340 issued] charged to [the] a user [TARO].

[0028] Fig. 10 shows [procedures for a series of processes] the steps of the process performed between [the] an ISP [14], the server [60] and the user node [18].

[0029] Fig. 11 is a screen, showing the [most recent] state of [the] an ISP [14], displayed on the user terminal.

DETAILED DESCRIPTION OF THE INVENTION

[0030] The invention will now be described based on the preferred embodiments, which do not intend to limit the scope of the present invention, but exemplify the invention. All of the features and the combinations thereof described in the embodiment are not necessarily essential to the invention.

[0031] In Fig. 2 [illustrates a structure of a system 50 including a provider transfer server 60 according to an embodiment of the present invention. The], the same structural components as those shown in Fig. 1 are given the identical reference numerals, and different portions therefrom will be described here. [The] A provider transfer server 60 is connected to a plurality of user nodes 18, and to a plurality of [internet] Internet service providers (ISP) 14 and public networks 16. [The server] Server 60 is connected to the user [node] nodes 18 by a dial-up connection[, and the]. Likewise, server 60 is [dial-up] connected via another dial-up connection to [the] [ISP] ISP's 14. [The user node 18 has a] Users can contract with an operator of [the] a server 60[,] so that [the] a user node 18 can [establish a connection] connect to an access point of the server 60 at any time. [On the other hand, when the] When a user node 18 is connected to [the] a server 60, the server 60 [selects] can select an ISP [14] most suitable[,] from among a plurality of [the] ISP's [14, for the user node 18 according to a user preference and the like, so as] to establish [a] connection to [said then] a selected ISP 14 (also referred to as a selected ISP 14 hereinbelow). Thereafter, a communication channel between the user node 18

and the selected ISP 14 is generated [in] through the server 60[,] so that the server 60, serving as a relay station, connects both parties. At this point, the access point of the user node 18 is [in fact moved] directly connected to the selected ISP 14.

[0032] The ISP 14 may independently [have a contract] directly with [a user] other users besides the users via [the] server 60. However, since the user who is under contract with the server 60 (also referred to as a secondary user hereafter) is connected to the ISP 14 by way of the server 60, the ISP 14 does not recognize those secondary uses individually but [recognize] recognizes the server 60 as a single primary user. Thus, the ISP 14 charges [to] the primary user (i.e., the operator of [the] server 60) the connection fees relating to all secondary users.

[0033] [On the other hand, the server] Server 60 stores session records for each ISP 14 and user node 18, and collects the connection fees from the users which [the operation of] the server 60 [paid] pays to the ISP on behalf of the users. Similarly, based on the session records, the operator of [the] server 60 charges [to] the user a handling fee for the service [by which to connect] for connecting the user to the ISP 14. [Thus, macroscopically speaking, the] The above scheme is equivalent to [the fact that] the users [pay the] paying a connection fee to the ISP 14 in [a] the usual manner, while the operator of [the] server 60 [enjoys the profit amounting to] derives revenue from the handling fee.

[0034] Fig. 3 is a block diagram showing [a] the structure of [the] server 60. In terms of hardware components, the server 60 is usually comprised of and realized by a CPU, a memory and a provider transfer managing program loaded in [the] memory. It is [to be] understood by those skilled in the art that the way to realize such [the] structure and [a mode of the] system may vary greatly. It is to be noted that Fig. 3 does not show a hardware-oriented structure but simply a function-oriented block diagram.

[0035] [A first] First communication unit 100 communicates with [the] a user node 18 via the external public network 16. [The first communication] Communication unit 100 is mainly comprised of a modem, a terminal adapter and a communication control program. [A second] Second communication unit 102_1 having [the] a similar structure [to the] as first [communication] unit 100_1 communicates with the ISP 14 via the public network 16.

[0036] A user authenticating unit 118 [authenticates] identifies a user who is dial-up connected to [the] first communication unit 100, based on data of [a] user database 136. [Based on] Assuming there is a contract [made] between the operator of [the] server 60 and the user, necessary information such as a user ID, a password, billing information and so forth are recorded in [the] user database 136. [When the] If a user [fails to be authenticated] is not authenticated or property identified, a [disconnection] disconnect instruction 150 is sent to [the] first communication unit 100.

[0037] A selection circuit 104 [selects an object which will communicate with] connects the first communication unit 100[. Under normal conditions a] along path A [is selected, namely the communication unit 100 communicates with a] to Web server functional block 120. [Thus, though] Although to a user on the Web the server 60 seems to function as a normal server [on WWW from the user's standpoint, its entity does not live in the Internet but behaves and], it in fact functions as a Web server on [the] public network 16.

[0038] When the second communication unit 102 establishes a connection to the selected ISP 14, [the] selection circuit 104 selects a path B based on a selection signal 140 issued from [the second communication] unit 102. [At this moment, a] Then, the communication destination of the first communication unit 100 is switched from the Web server functional block 120 to the second communication unit 102[,] so that a [communication channel] connection is formed between the first communication unit 100 and the second communication unit 102. Thereafter, the user gets [a] connection [service] to the Internet [from] through the selected ISP 14. When the user disconnects [the connection between the user node 18 and the] at first communication unit 100, [its] a disconnection signal 144 is sent to the second communication unit 102[,] so that the connection between the second communication unit 102 and the ISP 14 is also disconnected.

[0039] When [a path] the communication between [the first communication unit] units 100 and [the second communication unit] 102 is [of] a digital signal,

the selection circuit 104 can [be realized] utilize a transceiver gate having an output disable terminal. When the [path between the first communication unit 100 and the second communication unit 102 is an analog signal path found on the usual public line] signal is analog, as with most public phone lines, the selection circuit 104 may comprise a transfer gate [and so forth, or may be such that, as] or a transfer telephone device as disclosed in Japanese Patent Application Laid Open No. Sho60-198950, whish shows a transformer [is provided] between the first communication unit [100] and the second communication unit [102] so as to form [a communication channel by electromagnetic induction] an inductive connection.

[0040] When the second communication unit 102 [made] makes a dial-up connection to the selected ISP 14, an authentication data storing unit 116 sends data such as user ID and password, in response to an authentication request from the ISP 14. Thereby, [the] server 60 is recognized as a user by the selected ISP 14.

[0041] A service state detecting unit 108 detects [a] the state of the connection server of each ISP 14, especially how congested the line is [then] and the connection fee, [so as to be] and that information is registered in a provider information database 110. Since the degree of line congestion changes constantly, it is preferably detected as often as possible. Dummy data may be downloaded by connecting to each ISP 14 at regularly recurring intervals of time so as to measure [a] the data transfer rate. Moreover, in the

case where the ISP 14 itself publicly announces the line congestion status, [its data on the line congestion status may be utilized as such] such is itself stored. When the ISP 14 has a plurality of access points, it is preferred that the line congestion status be detected for all such access points [or at least a main access point. In that case, selection of an ISP 14 (described later) is made in terms of each access point].

[0042] Though the connection fee is usually fixed, it is sometimes revised[,] so [that a] the content of the provider information database 110 [is] should be updated at appropriate [timing] times via service state detecting unit 108. Since there are some ISP's [14] which [changes] change the connection fee depending on [a] time [period] periods, the service state detecting unit updates the connection fee based on the [present] current time.

[0043] The provider information database 110 stores data on the various ISP's [14]. Fig. 4 is a table showing [a] an example of data structure of the provider information database 110. The provider information database 110 includes a provider column 200, an access point column 202, a connection fee column 204, a priority column 206, a line state column 208 and a handling fee [scheme] schedule column 210. For example, the provider ABC has two access points where the connection fee during 12:00 – 17:00 is free due to a daytime discount or the like and is [5] 15 yen per minute during the rest of time period.

[0044] In the priority column 206, [a flag] indicator "0" is usually there while with [a flag] indicator "1" [entered] showing, the provider has a right of being connected on a priority [base] basis even if all the [ISP 14 presents] ISP's present the same condition [for the user compared to other ISP's 14]. The priority column 206 is [set according to an intention or a request of the ISP 14, and the] established by an ISP. The handling fee for [said] such ISP [14 becomes high] is likely higher, as described later.

[0045] The line state column 208 indicates the degree of line congestion [degree] for each ISP [14], and is updated at appropriate [timing] intervals by [the] service state detecting unit 108. [Here, how may percents (%)] This indicates to percentage of lines at each access point [owns] which are busy or in use [is indicated]. For example, 40% of [the] provider ABC are in use. As this number approaches 100, [the] line connection [tends to be unsuccessful. Since as for a] becomes more difficult. For example, provider STU and a provider XYZ each provider owns an access point [whose] which is 3% is busy[, it is judged in]. In terms of the line congestion [degree that the], both providers present the same condition.

[0046] The handling fee [scheme] schedule column 210 [indicates a scheme of] lists the handling [fee] fees (servicing fee) [requested] for each ISP [14] to which the operator of the server 60 connects the user. Here, 40% [of] intermediary connection fee is set [in the] for provider XYZ which [asks for] is the priority connection, while 20% is set [in] for other ISP's [14]. The

"intermediary connection fee" is the fee which the secondary user is [supposed] to pay for the connection [fee] and, is [a] the revenue which the ISP [14 earns] receives. Thus, [it is] this intermediary [connection] fee [that] comes into effect only when the server 60 is involved, and its rate may be set [in a] relatively high [range]. Conversely, [a business model may be easily realized] where the server [60] bears the telephone charges for the user to get connected [to the server 60. In that case, a servicing], the service value [in which the] for an increased number of users [tend to] who utilize the same server [60 is further enhanced] increases, thereby [the] an ISP [14 tends] will tend to seek [and make contract with the] a particular operator [of the server 60].

[0047] Referring back to Fig. 3, the Web server functional block 120 includes a group of functional modules which [first] behaves like a Web server when the secondary user [dial-ups on] accesses the server 60. A state provision unit 122 reads [out states] the state of each ISP [14] from the provider information database 110 and sends it to the user in the form of an HTML document. The user can confirm this [by] on a browser. A preference registration unit 124 engages in the selection of an ISP [14] and provides an interface which [registers in advance] stores the [preference] preferences of [a] users[. The registered preference is stored] in [a] user preference database 112. When a user manually instructs the selection of an ISP [14], [a] selection instruction acquiring unit 126 acquires the data and sends [them] it to [a] provider selection unit 106. [The preference] Preference registration unit 124 and [the] selection instruction acquiring unit 126 can be [realized by] Common Gateway Interface

(CGI) programs [and] or the like [prepared] resident in [the back of] the Web server functional block 120.

[0048] Fig. 5 shows a screen 22 [displayed] on a user terminal [by means of the function of] displaying the preference registration unit 124. Here[,] displayed are a service summary 222 of [the] server 60 and a selection item region 224 [on] in which the user [puts an emphasis in the course] prioritizes the manner of selecting an ISP [14]. As [selection] candidates, there [are provided a] is "connection fee", [a] "[connection smoothness (]line congestion degree[)]", and a column marked [with] "others" in which the user can [freely] fill another parameter. By checking [on] any of these items and then sending it [with a click on] by clicking the SEND button, the user's [intention and] request will be reflected [on] by the selection of [the] an ISP [14]. Moreover, an item in which "a provider state is confirmed before connection" is provided as an option[,] so that the user who does not wish the server [10] to automatically select [the] an ISP [14] may manually select an ISP [14] of his/her choice.

[0049] Fig. 6 is a table showing data inside the user preference database 112. Here, a user ID is entered in a user column 250 and a user's intention or request is entered in a request column 252. For example, the user "TARO" is [of] a type [that] where the connection fee is [emphasized] most imporant, and wishes the server [60] to automatically select [the] an ISP [14] on that basis. The user "HIRO" is [of] a type [that emphasis is placed on how open the line is then] to whom line congestion is important, and wishes to confirm the

state of a provider every time. For some users, connection speed is affected by the degree of congestion on the line, which in turn affects the cost of the on-line time.

[0050] Referring back to Fig. 3, the provider selection unit 106 selects the [best] most suitable ISP [14] according to the provider information database 110, the user preference database 112 and a manual selection instruction 142 from the user. [A] The result of the selection is [notified] sent to the second communication unit 102 so as to execute a dial-up connection.

[0051] A session managing unit 130 supervises the connection state of the second communication unit 102 and the ISP 14, and its log-in is recorded in a session table 132. Fig. 7 is a table showing the data [inside] in the session table 132. [The session table] Table 132 includes a session number column 300, a user column 250, a provider column 200, a connection time column 306 and a connection fee column 308. The session number column 300 is a serial number which specifies a session. The session number column 300 and the user column 250 indicate the user node 18 and the ISP 14 which the server 60 relayed for each session. The connection time column 306 shows the duration of the [connection for the] session, and connection fee column 308 shows an amount of fees which the ISP [14] charges for the session. The connection [fee] fees in column 308 [is filled] are computed by consulting [with] the connection time 306 and [based on] the connection fee column 204 of the provider information database 110. For example, the user of

the session "1" is TARO and the provider thereof is ABC and the connection time thereof is 15 minutes 31 seconds, and the connection fee is 0 due to the daytime discount in the provider ABC.

[0052] A charge unit 134 calculates [a charge] the amount to be billed to the ISP [14] for the handling fee, and another charge [amount] to be billed to the user as the connection fee, based on the [content of the] data in session table 132. Fig. 8 is a table showing the details of a debit note 320 sent to [the] provider ABC. [In a total connection time column 322, the] The total connection time [period] shown in column 322 during which the server 60 connects the user to this provider is recorded as "58200 minutes". Similarly, the total number of connections established [324] is recorded as "6215" in column 324, and the total connection fee [326] is recorded as "163000 yen" in column 326. The total connection fee 326 is same as the "intermediary connection fee" in the handling fee [scheme] schedule column 210 shown in Fig. 4. The handling fee 328 is 20% of the total connection fee according to the handling fee [scheme] schedule column 210, and is thus recorded as "32600 yen". Eventually, this amount of 32600 yen is billed to the provider as the handling fee. [However, since] Since the provider will charge "163000 yen" as the total connection fee [326], [thus] the difference therebetween may be remitted to the provider ABC[, instead].

[0053] Fig. 9 is a table showing the details of a debit note 340 for the connection fee [charge 340 issued] charged to [the] user TARO. Here[,

entered] are shown a provider, column 342, [which held] lists the [session] sessions according to [the] TARO's request, the total connection time 344 for each provider, and the total connection fee 346 for said each provider. Lastly, the total connection fee of "963 yen" is entered in the debit note 340.

[0054] Fig. 10 shows procedures for [a] the series of processes performed between the ISP 14, the server 60 and the user node 18 [configured above. Prior to]. Without a provider transfer service, the server [60] generates the provider information database 110 and the user preference database 112 (S10). When the user node 18 contacts the [serve 60] server by a dial-up connection (S12), the server 60 authenticates this user (S14). If there is no problem [then], a connection is established between the user node 18 and the server 60 (S16).

[0055] The server 60 reads out the data of the ISP 14 from the provider information database 110 (S18) and the read-out data are displayed on a screen of the user node 18 via the state provision unit 122 (S20). Simultaneously, the server 60 selects an ISP [14] for the user by referring to the user preference database 112 (S22), then the server 60 connects the user to the selected ISP [14] by a dial-up connection. Fig. 11 is a screen, showing the [most recent state] current status of the ISP 14, displayed on the user terminal. Here, [a state concerning a] the status of provider ABC 262 and [a state 264 concerning a] provider STU are displayed in terms of both the line usage rate and the connection fee[, and]. Also displayed is a connection display 266 which indicates that the server 60 (namely, the user) is being currently connected to

the selected provider ABC. If the user wishes to change to another ISP [14], a new dial-up connection is attempted [to establish a connection to a desired ISP 14] by clicking on [a] "destination-manually-specified" button 268. [Since] When the connection is not made automatically when the user selects "confirm" in the request column 252 of the user preference database 112, the connection display 266 is not displayed and the destination-manually-specified button 268 is [yet] ready to be clicked.

[0056] [The ISP 14] When an ISP authenticates the server 60 which attempted to establish a connection by the dial-up, as a legitimate user (S26), [so that the] connection is established between the ISP [14] and the server [60] (S28). Then, the selection circuit 104 switches from the path A to the path B (S30), and the connection is actually established between the ISP 14 and the user node 18 (S32).

[0057] Thereafter, the user does [arbitrary processes as] whatever he wishes [under] during the Internet connection [service] realized through the ISP 14. When the connection is no longer wanted, the user disconnects the line between the first communication 100 and the user (S34). The, the line between the second communication unit 102 and the ISP 14 is also disconnected (S36)[,] so that a session is completed and its record is added to the session table 132 (S38). Finally, billing data on the user and the ISP 14 are generated based on the session table 132 (S40) and [then a] then, the series of processes are completed.

[0058] The present invention has been described based on the embodiments which are only exemplary. It is understood by those skilled in the art that there exist other various modifications to the combination of each component and each processing described and that such modifications are encompassed by the scope of the present invention. For example, combination of the internal structure of the server 60 shown in Fig. 3 may be modified to a large degree [of freedom]; the user preference data base 112 and the user authenticating unit 118 may be configured in an integrated manner; data of [a] line usage rate and so on which vary on a real-time basis may be managed in a manner such that said data are separated from the provider information database 110. Moreover, the server 60 may be provided with [a] full-scale line switching capability [therein].

[0059] Moreover, there may be provided a plurality of the second communication units 102 such that they can be constantly or permanently connected to each of a plurality of the ISP's [14]. In that case, the selection circuit 104 will select the second communication unit 102 connected constantly to the selected provider.

[0060] As for Fig. 10, various modifications are possible. For example, prior to or after establishment of the connection between the user node 18 and the server 60, the service state detecting unit 108 may access each provider in order to obtain the latest data on the providers.

[0061] [According to] Accordingly, the present embodiments[, achieved is an] achieve a network connection service with high usability and practicality and increased convenience for the users. Moreover, [the] a service is [achieved] provided which is [also] profitable to [the] providers that provide the network connection servicing.

[0062] Although the present invention has been described by way of exemplary embodiments, it should be understood that many changes and substitutions may be made by those skilled in the art without departing from the spirit and the scope of the present invention which is defined by the appended claims.

WHAT IS CLAIMED IS:

1. A provider transfer server which provides a predetermined service for a user node, the server comprising:

a first communication unit which serves as an access point connected from the user node;

a second communication unit which connects the server to any one of access points owned by a plurality of connection service providers;

a detection unit which detects a connection service state of a plurality of the connection service providers;

a selection unit which selects a connection service provider based on the state detected by said detection unit and which instructs said second communication unit to get connected to an access point of the connection service provider selected; and

a communication channel establishing unit which establishes a communication channel between said first and second communication units in the event that said second communication unit is connected to the access point of the selected connection service provider.

2. A provider transfer server as recited in Claim 1, further comprising a unit which registers in advance a user's preference for a connection service provider to be selected, wherein said selection unit chooses a connection service provider according to the user's preference, based on the state detected by said detection unit.

3. A provider transfer server as recited in Claim 1, wherein said selection unit selects a connection service provider whose lines are relatively open at the time said detection unit detects the state.

4. A provider transfer server as recited in Claim 2, wherein said selection unit selects a connection service provider whose lines are relatively open at the time said detection unit detects the state.

5. A provider transfer server as recited in Claim 1, wherein said selection unit selects a connection service provider whose connection fee is relatively low, at the time said detection unit detects the state.

6. A provider transfer server as recited in Claim 2, wherein said selection unit selects a connection service provider whose connection fee is relatively low, at the time said detection unit detects the state.

7. A provider transfer server as recited in Claim 1, further comprising:

a recording unit which records sessions where the communication channel is established for the connection service provider, for each connection service provider; and

a charge unit which calculates a service fee incurred by a user for each connection service provider, based on data of the session recorded by said recording unit.

8. A provider transfer server as recited in Claim 1, wherein said second communication unit and a plurality of the connection service providers are connected in an area more local than the Internet.

9. A provider transfer server as recited in Claim 1, further comprising:

a unit which supplies the detected state to a terminal of the user node; and

an acquisition unit which acquires, from the user node, an instruction on selection of the connection service provider,

wherein said selection unit selects the connection service provider by referring to the instruction.

10. A provider transfer server as recited in Claim 7, wherein said charge unit calculates, for each user node, an allotted charge due to a connection fee paid to the connection service provider by an operator of the provider transfer server on behalf of the user nodes, based on the data of the session.

11. A provider transfer server as recited in Claim 8, wherein said charge unit calculates, for each user node, an allotted charge due to a connection fee paid to the connection service provider by an operator of the provider transfer server on behalf of the user nodes, based on the data of the session.

12. A provider transfer server as recited in Claim 9, wherein said charge unit calculates, for each user node, an allotted charge due to a connection fee paid to the connection service provider by an operator of the provider transfer server on behalf of the user nodes, based on the data of the session.

13. A provider transfer server as recited in Claim 1, further comprising:

an authenticating unit which authenticates that the user node is a legitimate user of the provider transfer server; and

an authentication data supplying unit which, upon request of authentication from the connection service provider, supplies data necessary for the requested authentication, wherein the provider transfer server is regarded as a user by the connection service provider.

14. A provider transfer server as recited in Claim 1, wherein said selection unit includes a transceiver gate having an output disable terminal in the event that a path between said first communication unit and said second communication unit is of a digital signal path.

15. A provider transfer server as recited in Claim 1, wherein said selection unit includes a transfer gate in the event that a path between said first communication unit and said second communication unit is an analog signal path.

16. A provider transfer server as recited in Claim 1, wherein there are provided a plurality of said second communication units which are permanently connected to respective internet service providers, whereby said selection unit selects said second communication units.

17. A provider transfer server as recited in Claim 1, wherein prior to or after establishment of a connection between the user node and the provider transfer server, the detection unit accesses each internet service provider so as to obtain the latest data on the internet service providers.

18. A method of providing a provider transfer service, the method comprising:

detecting, at a proper timing, a connection service state in a plurality of connection service providers which provide connection services to network;

receiving a request in which a user node requests to get connected to the network;

selecting a connection service provider according to the state detected; and

relaying a communication between the connection service provider thus selected and the user node,

wherein an intermediary process is performed in a manner such that the provider transfer service is treated as a user, by the connection service provider thus selected while the user node is treated as a user by the provider transfer service.

ABSTRACT OF THE DISCLOSURE

A server is provided between a plurality of Internet service providers and a plurality of user nodes. The server chooses an appropriate Internet service provider to which a user node is to be connected, according to a user's [preference] preferences. When the user node [is] a dial-up [connected to the server] connection, the server dials up on the Internet service provider which suits the user's preference. After the connection between the user node and the server and the connection between the server and the Internet service provider are established, the server records [a] the connection time [and so on] of a session [in question] and uses the [thus] recorded data for calculating [fee] the service fees to be charged.